LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (Previously Presented)

A thermal barrier coating system comprising a metal substrate, a metal bonding layer, and a ceramic thermal barrier layer formed on the surface of the metal substrate via the metal bonding layer by an electron beam physical vapor deposition method, wherein

the ceramic thermal barrier layer contains 0.1 to 10 mol % of lanthanum oxide, and has a columnar structure of a stabilized zirconia containing a stabilizer, and the ceramic thermal barrier layer has a composition represented by the general formula:

$(Zr_{\alpha})O_2$-β mol% (M_2O_3)-γ mol % (La_2O_3)(wherein M_2O_3 is the stabilizer and M consists of at least one element selected from Y, Er, Gd, Yb, Ce, Nd, Pr and Sc, and α, β and γ are coefficients) and the coefficients α, β and γ satisfy the relationships: $\alpha=1$, $3.1\leq\beta\leq15$, and $0.1\leq\gamma\leq10$.

Claims 2-4 (Canceled)

Claim 5 (Original)

The thermal barrier coating system according to claim 1, wherein the metal bonding layer is made of one of an MCrAlY alloy (wherein that M is at least one kind of metal selected from Ni, Co, Fe, and an alloy thereof) and platinum aluminide.

Claim 6 (Previously Presented)

The thermal barrier coating system according to claim 1, wherein the metal substrate, on which the ceramic thermal barrier layer is formed via the metal bonding layer, is gas turbine part.

Claim 7 (Previously Presented)

The thermal barrier coating system according to claim 6, wherein the gas turbine part is at least one selected from the group consisting of a turbine nozzle vane, a turbine blade and combustion chamber parts.

Claim 8 (Previously Presented)

A thermal barrier coating system comprising a metal substrate, a metal bonding layer, and a ceramic thermal barrier layer formed on the surface of the metal substrate via the metal bonding layer by an electron beam physical vapor deposition method, wherein

the ceramic thermal barrier layer contains 0.1 to 10 mol % of lanthanum oxide, and has a columnar structure of stabilized zirconia-hafnia solid solution containing a stabilizer, and

$(Zr_{\alpha}Hf_{1-\alpha})\ O_2$-$\beta$ mol% (M_2O_3)-γ mol % (La_2O_3)(wherein M_2O_3 is the stabilizer and M consists of at least one element selected from Y, Er, Gd, Yb, Ce, Nd, Pr and Sc, and α, β and γ are coefficients) and α, β and γ satisfy the relationships: $0.05<\alpha<1$, $3.1\leq\beta\leq15$, and $0.1\leq\gamma\leq10$.

Claims 9-11 (Canceled)

Claim 12 (Original)

The thermal barrier coating system according to claim 8, wherein the metal bonding layer is made of one of an MCrAlY alloy (wherein that M is at least one kind of metal selected from Ni, Co, Fe, and an alloy thereof) and platinum aluminide.

Claim 13 (Previously Presented)

The thermal barrier coating system according to claim 8, wherein the metal substrate, on which the ceramic thermal barrier layer is formed via the metal bonding layer, is gas turbine part.

Claim 14 (Original)

The thermal barrier coating system according to claim 13, wherein the gas turbine part is at least one selected from the group consiting of a turbine nozzle vane, a turbine blade and combustion chamber parts.

Claims 15-18 (Canceled)

Claim 19 (Currently Amended)

A thermal barrier coating system comprising a metal substrate, a metal bonding layer, and a ceramic thermal barrier layer formed on the surface of the metal substrate via the metal bonding layer by an electron beam physical vapor deposition method, wherein

the ceramic thermal barrier layer contains 0.1 to 10 mol% of lanthanum oxide, and has a columnar structure of a stabilized zirconia containing a stabilizer, and the stabilizer contained in the ceramic thermal barrier layer is at least one kind of an oxide selected from the group consisting of ~~yttrium oxide,~~ erbium oxide, gadolinium oxide, ytterbium oxide, neodymium oxide, praseodymium oxide, cerium oxide and scandium oxide.

Claim 20 (Previously Presented)

A thermal barrier coating system comprising a metal substrate, a metal bonding layer, and a ceramic thermal barrier layer formed on the surface of the metal substrate via the metal bonding layer by an electron beam physical vapor deposition method, wherein

the ceramic thermal barrier layer contains 0.1 to 10 mol% of lanthanum oxide, and has a columnar structure of a stabilized zirconia containing a stabilizer, and

the ceramic thermal barrier layer is composed of a plurality of columnar grains grown vertically from the surface of the metal substrate and having an orientation in the direction of the <100> or <001> plane, laminar or bar-shaped subgrains being arranged on the surface of the columnar grains, and nano-size pores being formed in each columnar grain, and wherein the ceramic thermal barrier layer has a porosity of 10 to 50% by volume.

Claim 21 (Currently Amended)

A thermal barrier coating system comprising a metal substrate, a metal bonding layer, and a ceramic thermal barrier layer formed on the surface of the metal substrate via the metal bonding layer by an electron beam physical vapor deposition method, wherein

the ceramic thermal barrier layer contains 0.1 to 10 mol% of lanthanum oxide, and has a columnar structure of stabilized zirconia-hafnia solid solution containing a stabilizer, and the stabilizer contained in the ceramic thermal barrier layer is at least one kind of an oxide selected from the group consisting of ~~yttrium oxide,~~ erbium oxide, gadolinium oxide, ytterbium oxide, neodymium oxide, praseodymium oxide, cerium oxide and scandium oxide.

Claim 22 (Previously Presented)

A thermal barrier coating system comprising a metal substrate, a metal bonding layer, and a ceramic thermal barrier layer formed on the surface of the metal substrate via the metal bonding layer by an electron beam physical vapor deposition method, wherein

the ceramic thermal barrier layer contains 0.1 to 10 mol% of lanthanum oxide and has a columnar structure of stabilized zirconia-hafnia solid solution containing a stabilizer, and is composed of a plurality of columnar grains extending vertically from the surface of the metal substrate and having an orientation in the direction of at least one of the <100> and <001> plane, laminar or bar-shaped subgrains being arranged on the surface of the columnar grains, and nano-size pores being formed in each columnar grain, and wherein the ceramic thermal barrier layer has a porosity of 10 to 50% by volume.

Claim 23 (New)

A thermal barrier coating system according to claim 20, wherein the content of the stabilizer is between about 3-15 mol%.

Claim 24 (New)

A thermal barrier coating system according to claim 20, wherein the stabilizer contained in the ceramic thermal barrier layer is at least one kind of an oxide selected from the group consisting of erbium oxide, ytterbium oxide and praseodymium oxide.

Claim 25 (New)

A thermal barrier coating system according to claim 22, wherein the content of the stabilizer is between about 3-15 mol%.

Claim 26 (New)

A thermal barrier coating system according to claim 22, wherein the stabilizer contained in the ceramic thermal barrier layer is at least one kind of an oxide selected from the group consisting of erbium oxide, ytterbium oxide and praseodymium oxide.